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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/743,929	01/16/2001	Silvia Gohlke	P- 00,1958	8930

7590 11/25/2003

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EXAMINER

GOFF II, JOHN L

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 11/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/743,929

Applicant(s)

GOHLKE ET AL.

Examiner

John L. Goff

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-16 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-16 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/15/03 has been entered.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

3. Claim 13 is objected to because of the following informalities: In claim 13, line 1 delete "second" and insert therein - - first - -. It is noted the preliminary amendment referred to the first material, and it appears to be an error that claim 13 now refers to the second material. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 10-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishikawa (JP 06097656 A, Abstract of JP 06097656 A, and Machine translation of JP 06097656 A) in view of Sato et al. (U.S. Patent 4,882,455), Polinski (U.S. Patent 5,708,570), and Lin et al. (U.S. Patent 5,242,867).

Nishikawa is directed to a method for producing a ceramic multilayer board (substrate for carrying semiconductors, etc. which is capable of being used in a high frequency module) wherein the board comprises at least one planar electrode connected to electrical interconnections, at least one layer composed of a first green sheet, which becomes compacted in a first temperature interval, and at least one layer composed of a second green sheet, which becomes compacted at a second temperature interval that is different from the first temperature interval (See Figures 1-3, the abstract lines 1-9, and the translation page 2, paragraph 11). Nishikawa teaches compacting the first green sheet at the temperature interval between 600 and 1000 °C and compacting the second green sheet at the temperature interval between 800 and 1500 °C. Nishikawa further teaches forming the planar electrodes and electrical interconnections from a conductive metal paste comprising metals such as copper, palladium, platinum, and/or silver (See the translation page 3, paragraphs 21 and 23). Nishikawa is silent as to forming the electrodes from a metal foil as opposed to the conductive metal paste. It would have been well within the purview of one of ordinary skill in the art at the time the invention was made to form the electrodes taught by Nishikawa from metal foil as it was well known in the art to form

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electrodes from metal foils, conductive metal pastes, and combinations thereof as shown for example by Sato et al. and only the expected results would be achieved.

It is further noted Nishikawa as modified by Sato et al. are silent as to a specific teaching of the first and second green sheets having substantially identical coefficients of expansion (of for example between 6 and 7 ppm/K). However, one of ordinary skill in the art at the time the invention was made would have readily appreciated using in Nishikawa as modified by Sato et al. green layers having substantially identical coefficients of expansion as was well known in the art and shown for example by Polinski to ensure the layer stack does not crack and/or distort after compacting. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use first and second green sheets in Nishikawa as modified by Sato et al. and Polinski having thermal coefficients of expansion below 8 ppm/K such that the coefficients of expansion of the green layers essentially match those of the additional layers within the multilayer, e.g. electrodes, metal foils, conductive paste, etc., thus preventing the additional layers from cracking or distorting as was well known in the art as shown for example by Lin et al.

Regarding claim 11, Nishikawa teaches a number of different layer stack sequences having different properties/functions (See Figures 1-3). One of ordinary skill in the art at the time the invention was made would have readily appreciated that Nishikawa does not show all possible layer stack combinations and it would not have required undue experimentation to form alternative layer stack combinations having different properties/functions. Furthermore, it is noted Nishikawa teaches two sequences wherein a layer stack having a layer sequence in one

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direction is arranged on top of a layer stack having the same sequence in an opposite direction (Figures 1 and 2).

Sato et al. are directed to electronic circuit substrates. Sato et al. teach forming conductor circuits on the electronic circuit substrates using conventional techniques including adhering a metal foil, applying a conductive paste, and combinations thereof (Column 5, lines 21-29).

Polinski is directed to a ceramic structure comprising electronic components, a plurality of green layers, and shrinkage control layers (Figure 2 and Column 4, lines 28-32 and 43-45). Polinski teaches that the coefficients of expansion for the electronic components, green layers, and shrinkage control layers substantially match to ensure the structure does not crack and/or distort after firing (Column 1, lines 50-57 and Column 4, lines 17-23 and 45-48).

Lin et al. disclose ceramic multilayer substrates for use in manufacturing electronic packages. Lin et al. teach the ceramic layers have expansion coefficients of 3-8 ppm/°C such that the coefficients of the ceramic layers essentially match those of the additional layers within the multilayer thus preventing the additional layers from cracking (Column 1, lines 26-29 and Column 3, lines 6-19 and Column 6, lines 62-68 and Column 7, lines 1-6).

Response to Arguments

6. Applicant's arguments with respect to claims 10-16 and 18-20 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion


7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **703-305-7481** (after December 2003 the telephone number will be 571-272-1216). The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



John L. Goff



JEFF H. AFTERGUT
PRIMARY EXAMINER
GROUP 1300